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# Additional Botanical Assessment of Conservation Reserve Enhancement Program (CREP) Sites in Illinois

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## Summary

Biological assessment of properties enrolled in the Conservation Reserve Enhancement Program (CREP) in Illinois has generally been lacking. To remedy this situation, scientists from the Illinois Department of Natural Resources and the Illinois Natural History Survey teamed up in 2009 to conduct a pilot study to make general botanical assessments of 11 randomly selected sites comprising 17 private properties in central Illinois enrolled in CREP. Botanical assessments were repeated in 2010 with an additional eight randomly selected CREP properties. Each property was visited once, and a list of plant species was made and general vegetation structure was noted. Sites ranged from being dominated by native herbaceous species like common goldenrod to being dominated by tree species like silver maple and eastern cottonwood. Native plant species were generally more abundant than non-native species, but invasive species like reed canary grass, field thistle, and Amur honeysuckle were present on some sites. Compared to randomly selected wetland and grassland sites sampled as part of the Critical Trends Assessment Program (CTAP), the CREP sites were more botanically rich and diverse, but as sites mature without management or disturbance, plant diversity is expected to decline.

## Introduction to Illinois CREP

The Conservation Reserve Enhancement Program (CREP) is a federal and state conservation incentive program that was created by a Memorandum of Agreement (MOA) between the U.S. Department of Agriculture, the Commodity Credit Corporation, and the State of Illinois in March 1998. Enrollments into this program began on May 1, 1998 (State of Illinois 2009). It is administered through the US Department of Agriculture's Farm Service Agency, Natural Resources Conservation Service, local Soil and Water Conservation Districts, and the Illinois Department of Natural Resources.

One of the goals of CREP is to establish on-the-ground conservation practices to reduce sedimentation and nutrient input into Illinois' streams and rivers. The other goal is to enhance habitat to increase fish and wildlife populations. The entire Illinois River Basin is targeted with an emphasis on the 100-year floodplain (Figure 1). Parcels of land managed for conservation rather than agriculture along the main stem of the Illinois River and its tributaries are expected to help protect water quality in the river. Conservation practices also protect environmentally sensitive land and safeguard ground and surface water.

Landowners voluntarily enroll parcels of eligible agricultural land (i.e. land with a cropping history) and receive incentive payments for installing specific conservation practices. Parcels of land are first enrolled in a Federal 15-year Conservation Reserve Program (CRP) contract, and landowners receive annual rental payments and cost-share incentives. Once enrolled in the Federal program, landowners have the option to extend their contract by entering into a State conservation easement for an additional 15 years, 35 years, or permanently (PERM), and the State of Illinois provides incentives for the different options. Participants retain ownership of their land, and CREP does not place restrictions on recreational activities, including hunting and fishing. When a parcel is enrolled, land use changes (i.e. cropping practices stop), and conservation practices are implemented which include planting the site with a permanent vegetative cover such as perennial grasses, forbs, or trees.

By coupling conservation initiatives with landowner incentives, CREP has been able to achieve large-scale restoration of natural areas on private lands to stabilize soil, improve water quality, and support wildlife (Allen 2005). From inception of the program in 1998 through September 2009, total Federal enrollment in Illinois is at126,601 acres (State of Illinois 2009). The Illinois CREP program is one of the most successful in the nation, and the state has enrolled more than 126,000 acres. Thus, the United States Department of Agriculture has approved an expansion of the CREP program into the Kaskaskia River Watershed as well as an additional 100,000 acres to be enrolled through December 31, 2012. Over 90% of state CREP acres are in permanent easements, ensuring long-term protection of floodplains and other environmentally sensitive land.

## Botanical Assessment of Illinois CREP Sites

Since the implementation of CREP in Illinois, little biological assessment or monitoring has been conducted on CREP practices to evaluate if the program is achieving what it set out to

accomplish. With tracts scattered throughout the Illinois River Basin, it is difficult for the administrating agencies to effectively monitor the habitats being created through CREP practices. Local Soil and Water Conservation Districts (SWCD) conduct easement compliance monitoring, but they might lack the skill or resources to conduct biological assessments.

Researchers from the Illinois State Water Survey have monitored sediments and nutrients in select watersheds to evaluate this aspect of the program since 1999 (Demissie et. al 2001, State of Illinois 2009). Even with only nine years of data, they have found that sediment loads have generally leveled off but no trends in nutrient loads have been detected. A longer period of data collection is needed to assess the long-term effectiveness of CREP practices. Phillips and Brown (2004) examined the vegetation composition and structure of wetlands created through CREP and found, not surprisingly, that CREP wetland sites were dominated by common, weedy plant species. Using GAP analysis techniques, they did find that CREP acres should increase available habitat for a large number of species. O'Neal et al. (2008; see also O'Neal and Heske 2007) examined wetlands created as a result of CREP practices and found them to be important habitat for waterbirds as long as hydrology was managed (i.e. presence of open water) and there was the right amount of vegetative cover (i.e. about 30% of the wetland was vegetated). Other researchers have examined the impact of the Conservation Reserve Program (CRP) on grassland bird populations in Illinois (e.g. Herkert 2007, 2009) and have found a positive effect. These past studies are important and informative, but continued systematic assessment of CREP practices and its impacts on plants or wildlife is needed.

To remedy the lack of biological information, CREP management personnel from the Illinois Department of Natural Resources (IDNR) approached biologists working for the Critical Trends Assessment Program (CTAP) at the Illinois Natural History Survey (INHS) in early 2009 to initiate a pilot study to assess CREP practices in Illinois. CTAP biologists have collected bird, plant, and insect data from randomly selected forest, wetland, and grassland habitats across the state of Illinois since 1997 (IDNR 2001). Invertebrate data from randomly selected stream segments were also collected from 1997 to 2007. CTAP botanists would provide a basic knowledge of Illinois flora and would bring extensive field experience to the pilot study. CTAP also houses a large data set with which to make some generalized comparisons of CREP sites assessed. Specifically, CTAP botanists were asked to work with IDNR staff to provide on-the-ground botanical assessments of a subset of CREP sites during the 2009 field season (Ellis et al. 2010). To build on the information collected in 2009, another set of CREP sites were selected and assessed in 2010.

## Methods

CREP sites for this study were selected based on proximity to sites CTAP biologists planned to sample in 2010. Coordinates (latitude/longitude) for the CTAP 2010 sites and shape files (.shp) for all Illinois CREP easements were obtained. ArcGIS software was used to query all CREP easements within a 1 km radius of CTAP 2010 sites. This query provided a random sample of CREP sites to assess. In the case where additional sites were preferred or regional gaps were present sites were selected at random using the ArcGIS software. All of the CREP sites were on private property, so IDNR staff worked with local SWCD staff to contact prospective landowners and gain permission to access property to conduct the botanical surveys.

Each site was visited once during June or September 2010. Visual assessments were made by walking through or around each site where feasible (Figure 2). Thick vegetation or high water levels made some sites or parts of sites inaccessible. A plant species list was made of all identifiable vegetation encountered during the visit, and notable features such as dominant plant species, woody trees or shrubs, and an estimate of general vegetation height were recorded. No attempt was made to catalog every species that might have occurred on a site. Other notes might include water level or conditions, evidence of past disturbance such as flooding or mowing, or evidence of current management practices such as herbicide application or mowing. These notes were compiled to create basic plant species lists for each site as a whole as well as distinct fields or conservation practices within a site. Other notes about wildlife observations, site conditions on the day of the visit, or about site access were also compiled. Representative photographs were also taken at each site. Length of visit was noted and depended on the size of a site (acreage), accessibility, and general diversity of vegetation present. Larger and more botanically diverse sites typically took longer to assess.

## Results and Discussion

Nine sites were initially selected for assessment, but only eight sites were visited and assessed. Due to difficult access and time limitations, one site selected in Bureau County was not assessed. (Figure 1, Table 1, Appendix 1, 2, and 3).

A total of 17 CREP practices were assessed within the eight sites. The number of practices at each site ranged from one to three with an average of two (Table 1, Appendix 1). Five different CREP practices were observed: Riparian Forest Buffers, Permanent Wildlife Habitat, Wetland Restoration, Wildlife Food Plot, and Additional Acres. The most common practice was Additional Acres at seven sites. Additional Acres are lands that do not have a cropping history but are eligible for easement payment because they are adjacent to a CREP practice on the property and are in a 100-year floodplain. Typically Additional Acres do not receive any supplemental management. The Additional Acres for these seven sites were floodplain forests. Practices assessed had been implemented anywhere from two to 11 years prior to assessment with an average of 7.5 years. Sites ranged in size from 20 to 390 acres with a median size of 46 acres. Combined, all eight sites totaled 726 acres. Additional acres were not assessed for this study, so the amount of land assessed ranged from 7.5 to 279.5 acres with a median of 28 acres. Length of assessment time spent at each site averaged about two hours (Table 2). Two representative photographs taken at each site are included in Appendix 2.

As expected for properties eligible for enrollment in CREP, most sites could be classified as floodplains or bottomlands that are seasonally wet (i.e. flooded) through the late winter and spring. Most sites were dry or not inundated with water during visits. One site (Site 7, Schuyler County) was not accessible in late July because flooding. This site was accessible on a return visit in September.

## Plant Composition and Structure

The CREP practices on the eight sites assessed (not including Additional Acres) could be

characterized as early successional, fallow agricultural fields dominated by weedy annual and perennial plant species. General observations made at each site and plant species lists can be found in Appendix 3. A range of 40 to 74 plant species was observed at each site with a median of 52.5 species (Table 3). Thirty-two to 58 native plant species with a median of 40 species were observed, and six to 21 non-native plant species with a median of 11.5 species were observed. Interestingly, regardless of the size of the property, plant species richness was relatively similar across all sites (Table 3). All sites were well vegetated at the time of assessment. One site (Site #7 Schuyler County) had areas of bare soil and dead vegetation most likely due to extended inundation by floodwaters. This site also had an area of freshly tilled soil. Planted trees, mainly oak species, were observed at five (Sites 2, 3, 4, 5, and 6) out of the eight sites.

Most of the sites observed were dominated by perennial and annual forbs. Herbaceous vegetation typically ranged from two to four feet tall depending on the dominant species present. Trees included species planted as part of a conservation practice (typically oaks and other hardwoods) or volunteer tree species. Since all practices visited were less than ten years old, most trees were not very tall and ranged from seedlings to planted individuals that were two to three feet tall to fast growing volunteer species that were fifteen to twenty feet tall. Sites with frequent flooding disturbance usually had the thickest stands of volunteer trees species. Tree densities were estimated from thick, to scattered, to patchy depending on site conditions. Observed success of planted trees was variable. On a few sites planted with trees, hardwood species were obvious (e.g. Site #4 Fulton County) and at other sites planted trees were scattered and difficult to detect (e.g. Site #6 Logan County). This between site variability probably depended on the size of tree stock planted (i.e. small bare root seedlings versus larger saplings) as well as local site conditions (e.g. hydrology). Planted trees did poorly on sites with frequent flooding or prolonged inundation as well as on sites where herbaceous vegetation or volunteer trees over-topped planted trees. Oak species need plenty of sunlight to thrive and grow poorly in shaded conditions.

Eastern cottonwood (*Populus deltoides*) and silver maple (*Acer saccharinum*) were the most commonly encountered volunteer tree species. Seeds of these species are easily carried by floodwaters and readily colonize recently disturbed floodplains (i.e. sites with a history of agriculture, flooding). Bur oak (*Quercus macrocarpa*) was the most commonly encountered planted tree species. Common goldenrod (*Solidago canadensis*) was the most commonly encountered forb species. Annual grasses like foxtail (*Setaria faberi* and *S. glauca*) were very common. Other common annual forbs included ragweed (*Ambrosia trifida* and *A. artemisiifolia*), dogbane (*Apocynum cannabinum*), common milkweed (*Asclepias syriaca*), hairy aster (*Aster pilosus*), annual fleabane (*Erigeron annuus*), tall boneset (*Eupatorium altissimum*), pinkweed (*Polygonum pennsylvanicum*), and cocklebur (*Xanthium strumarium*). Other common grasses included Hungarian brome (*Bromus inermis*), barnyard grass (*Echinocloa crusgalli*), switch grass (*Panicum virgatum*), and reed canary grass (*Phalaris arundinacea*). One site (Site #8 Menard County) was dominated by planted grasses—switch grass and Indian grass (*Sorghastrum nutans*).

Non-native plant species were present on every site, but generally, native plant species represented most of the plant richness observed (Table 3). Some non-native species like Hungarian brome, tall fescue (*Festuca arundinacea*), and reed canary grass are widely planted for agricultural purposes, and they might have been planted at these sites or invaded from nearby

fencerows or road ditches.

Invasive plant species were noted on many sites but were not necessarily ubiquitous across sites. Worrisome herbaceous species that were observed included field thistle (*Cirsium arvense*), white and yellow sweet clover (*Melilotus* sp), wild parsnip (*Pastinaca sativa*), cut-leaved teasel (*Dipsacus laciniatus*), and reed canary grass. A patch of cut-leaved teasel was observed at one site (Site #5 Tazewell County). Some non-native species like barnyard grass and giant foxtail are ubiquitous but not cause for worry. Woody invasive species like autumn olive (*Eleagnus umbellata*), amur honeysuckle (*Lonicera maackii*), and white mulberry (*Morus alba*) were generally few and scattered where observed. Amur honeysuckle was particularly thick at the edge of one site (Site #2 Livingston County).

Generally speaking an invasive is a species that does not naturally occur in a specific area and whose introduction does or is likely to cause economic or environmental harm or harm to human health (see Colautti and MacIsaac 2004). Reed canary grass is an especially worrisome species that has been widely planted (Galatowitsch et al. 1999) and readily invades disturbed, wet soil (Kercher and Zedler 2004). Monotypic stands of this species have been shown to greatly decrease local biodiversity (Spyreas et al. 2009). We have observed that woody invaders like amur honeysuckle and autumn olive can fundamentally change the habitat structure of forests and grasslands in Illinois. These changes in structure could be detrimental to wildlife if, for example, shading from invasive shrubs impedes regeneration of oaks or invading shrubs eliminate grassland habitat needed by grassland bird species.

## Site Evaluation and Comparison with CTAP Data

It's difficult to make precise evaluations of conservation success or habitat quality based on observations during brief site visits because of multiple factors: short time since practice implementation (less than 10 years for all sites), differences in vegetation planted, differences in management practices, differences in hydrology, and differences in adjacent land-use (i.e. vegetation cover). Adjacent land use either impedes (e.g. row-crops) or contributes to plant species observed at any one site. General estimates of plant richness and diversity can be gleaned from the species lists made during each site visit and should only be used to give a general impression of vegetative cover at this point in time.

A comparison and general evaluation of CREP sites assessed for this study can be made with wetland and grassland sites sampled as part of the Critical Trends Assessment Program. CTAP sites are randomly selected from across the state of Illinois and therefore are expected to yield a picture of average wetland and grassland habitat in Illinois. Vegetation data are collected using a quantitative, plot based system (Molano-Flores 2003).

CTAP has found that in general, native plant species richness and cover are greater than non-native plant species in wetlands (Molano-Flores et al. 2007, Table 4). Even with this general finding, CTAP has also observed that almost a third of all randomly selected wetlands are dominated by reed canary grass (Spyreas et al. 2004). As mentioned above, this pernicious weed colonizes wet soils and forms monotypic stands usually to the detriment of other species. On average about 12 native and two non-native plant species were encountered in CTAP wetlands

(Table 4) or 83% of plant species are native and 17% are non-native.

Grasslands sampled by CTAP have an affinity to CREP sites because of similar hydrologic conditions, past disturbance events (e.g. row-crop agriculture), and current vegetation patterns as do CTAP wetland sites. With the almost complete destruction of the native grassland ecosystem (prairie) in Illinois, grassland habitat is now comprised of land in agricultural uses—pasture, hay, small grains, orchards, fallow fields, and now increasingly set aside land in programs like CRP and CREP. The overwhelming majority of grasslands sampled by CTAP are dominated by non-native, cool-season grasses like Hungarian brome, tall fescue, and Kentucky bluegrass (*Poa pratensis*). In general more native plant species are encountered than non-native species in CTAP grassland sites, but non-native species dominate because they comprise a greater proportion of the vegetation cover (Table 4). On average about ten native and seven non-native plant species were encountered in CTAP grasslands or 58% of plant species were native and 42% were non-native.

A greater richness of native plant species was found at CREP sites than at comparable CTAP sites, and consistent with CTAP findings, most of the species encountered at CREP sites were native to the Illinois flora. On the eight CREP sites assessed, 77% of plant species encountered were native and 23% were non-native. Even though plot-based measurements were not taken, the general sense is that native plant species dominated most CREP sites.

A closer look at the species encountered at CREP sites will also reveal that even though most of the plants are native, these species are disturbance tolerant and considered weedy. Native annual weeds like common and giant ragweed, tall boneset, and annual fleabane were encountered at many sites. Common goldenrod, found at every site, is a quick growing, native perennial herb that readily colonizes disturbed soil. Other weedy native, perennials included panicled aster and hairy aster. Woody natives with a somewhat weedy habit included species mentioned earlier—silver maple, eastern cottonwood, and green ash (*Fraxinus pennsylvanica* var. *subintegerrima*). Most annual species will decrease in abundance with time.

In a study of natural and restored (i.e. newly created) wetlands in Illinois, Matthews and Spyreas (2010) found that the species composition and successional development of restored wetlands does not necessarily result in desired outcomes (i.e. a botanically diverse wetland). Even with proper site preparation and planting of desirable species, the composition of restored wetlands eventually became (over 5 to 11 years) more similar to natural wetlands that were deemed degraded or of low botanical quality. They concluded that invasion by non-native species and lack of wetland plant propagules (i.e. seeds) limited development.

Without active and long-term management (activities such as addition of native plant seeds, prescribed fire, mowing, or herbicide application) or frequent disturbances (e.g. flooding) we assume CREP sites will eventually become less botanically diverse as a few perennial weeds or trees become more dominant and annual and biennial species fade away. Some of this is to be expected from normal vegetation succession over time, while some of it as mentioned, stems from a lack of management and seed sources for late successional wetland or floodplain forest plants. The study above shows that this scenario is probable. There is also the possibility of invasive plant species becoming dominant. Without control, species like field thistle, Amur

honeysuckle, autumn olive, white mulberry, and reed canary grass could grow and spread to the detriment of other species thus diminishing the habitat quality of the CREP practice.

## Recommendations for Future Monitoring

Rapid site visits such as the ones made for this study may be useful to give a general indication of vegetation structure and composition. Short visits can also be useful to detect unwanted, weedy, and invasive species that might degrade (i.e. lower botanical diversity) the CREP practice or nearby habitats. The short site visits presented here shouldn't necessarily be used as baseline data to compare to data collected in the future because they are not plot based (i.e. fixed area). Some generalizations can be made from them.

We recommend that a more systematic effort be made to collect quantitative vegetation data in a scientifically rigorous way, and we recommend that personnel with botanical expertise and a thorough knowledge of the Illinois flora should be utilized for data collection. Site selection methods that take into factors such as CREP practice, landscape position, or age of practice should also be considered to make meaningful data comparisons.

Quantitative vegetation data can be collected and indicators of vegetation quality could be calculated with some caveats. Richness, diversity, and Floristic Quality Assessment (Mean C, FQI) could be used but effort needs to be standardized (i.e. fixed area, plot based approach or a multiple visit approach). Investigators also need to realize that these methods might not be very meaningful to sediment and nutrient reduction goals or wildlife habitat creation goals. However, perennial plant cover no matter the species composition should effectively reduce sediments, and vegetation structure not necessarily composition is important to wildlife species. As discovered by O'Neal et al. (2008) and others (Phillips and Brown 2004), the Mean C and FQI values between CREP sites were low and without much variation because all CREP sites were colonized by common and weedy plant species all with low Coefficient of Conservatism values.

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Figure 1. Conservation Reserve Enhancement Program (CREP) sites sampled during summer 2010 as part of a botanical assessment pilot study. The entire Illinois River Basin has been the target region for Illinois CREP.

Table 1. A summary of the CREP properties sampled for the summer 2010 botanical assessment pilot study. Habitat type is a terse description of the conservation practice, and expiration refers to the number of years the easement lasts since enrollment. PERM indicates a permanent (99 year) easement. Listed area is in acres.

| Site # | Habitat Type | Practice | Subpractice | County | Year Implemented or Enrolled | Expiration | Listed Area | Total Acres | Type of Acres |
|---|---|---|---|---|---|---|---|---|---|
| **2** | Riparian Forest Buffers | CP22 | None | Livingston | 1999 | 15 yr | 37.00 | 37.00 | Riparian Buffer |
| **3** | Riparian Forest Buffers | CP22 | None | Woodford | 2001 | PERM | 30.10 | 52.20 | Riparian Buffer |
| | Additional Acres | ADD | | | | | 22.10 | | Floodplain (20.10) and HEL (2.0) |
| **4** | Wetland Restoration | CP23 | None | Fulton | 2000 | PERM | 279.50 | 390.20 | Riparian Buffer |
| | Additional Acres | ADD | | | | | 110.70 | | |
| **5** | Permanent Wildlife habitat | CP4D | None | Tazewell | 2007 | PERM | ~7.10 | 92.70 | Riparian Buffer |
| | Riparian Forest Buffers | CP22 | | | | | ~18.80 | | |
| | Additional Acres | ADD | | | | | 66.79 | | Floodplain |
| **6** | Riparian Forest Buffers | CP22 | None | Logan | 2001 | PERM | 7.50 | 27.20 | Riparian Buffer |
| | Additional Acres | ADD | | | | | 19.70 | | Floodplain (6.7) and HEL (17) |
| **7** | Wetland Restoration | CP23 | None | Schuyler | 2000 | PERM | 38.50 | 40.00 | Riparian Buffer |
| | Additional Acres | ADD | | | | | 1.50 | | ADD |

| Site # | Habitat Type | Practice | Subpractice | County | Year Implemented or Enrolled | Expiration | Listed Area | Total Acres | Type of Acres |
|---|---|---|---|---|---|---|---|---|---|
| **8** | Permanent Wildlife habitat | CP4D | None | Menard | 2008 | PERM | 19.50 | 66.92 | Riparian Buffer |
| | Additional Acres | ADD | | | | | 47.42 | | Floodplain |
| **9** | Wetland Restoration | CP23 | CP12 (Wildlife Food Plot) | Greene | 2004 | PERM | 11.30 | 20.00 | Riparian Buffer |
| | Additional Acres | ADD | None | | | | 8.70 | | Floodplain (6.4) and HEL (2.3) |
| **Totals** | | | | | | | 726.21 acres | | |

Table 2. Summary of hours spent on each site by primary investigator.

| Site | County | Visit Date (2010) | Hours on Site |
|---|---|---|---|
| **2** | Livingston | 15-Sep | 2.25 |
| **3** | Woodford | 15-Sep | 2 |
| **4** | Fulton | 9-Sep | 1.75 |
| **5** | Tazewell | 29-Jun | 4 |
| **6** | Logan | 2-Sep | 1.5 |
| **7** | Schuyler | 1-Sep | 2 |
| **8** | Menard | 2-Sep | 1.25 |
| **9** | Greene | 30-Jun | 2.25 |
| | | **Total** | **17** |
| | | **Average** | **2.13** |
| | | **Median** | **2** |

Table 3. Summary of number of plant species observed at each CREP site assessed in 2010. Lists of those species can be found in the site summaries in Appendix 3. These data do not represent a complete or exhaustive number of plant species that might have been on each site. The assessed acreage includes all CREP practices on a site in acres; this figure does not include the Additional Acres (ADD) since this practice was not assessed during site visits.

| Site | County | Acres Assessed | Native Species | Non-native Species | Total Species |
|---|---|---|---|---|---|
| **2** | Livingston | 37 | 36 | 11 | 47 |
| **3** | Woodford | 30.1 | 43 | 15 | 58 |
| **4** | Fulton | 279.5 | 58 | 12 | 70 |
| **5** | Tazewell | 25.9 | 41 | 21 | 62 |
| **6** | Logan | 7.5 | 39 | 6 | 45 |
| **7** | Schuyler | 38.5 | 32 | 8 | 40 |
| **8** | Menard | 19.5 | 37 | 9 | 46 |
| **9** | Greene | 11.3 | 55 | 19 | 74 |
| | **Total** | **449.3** | **158*** | **45*** | **203*** |
| | **Average** | **56.16** | **42.63** | **12.63** | **55.25** |
| | **Median** | **28** | **40** | **11.5** | **52.5** |

*These totals are not additive from the table; these data represent all species recorded across all eight CREP sites.

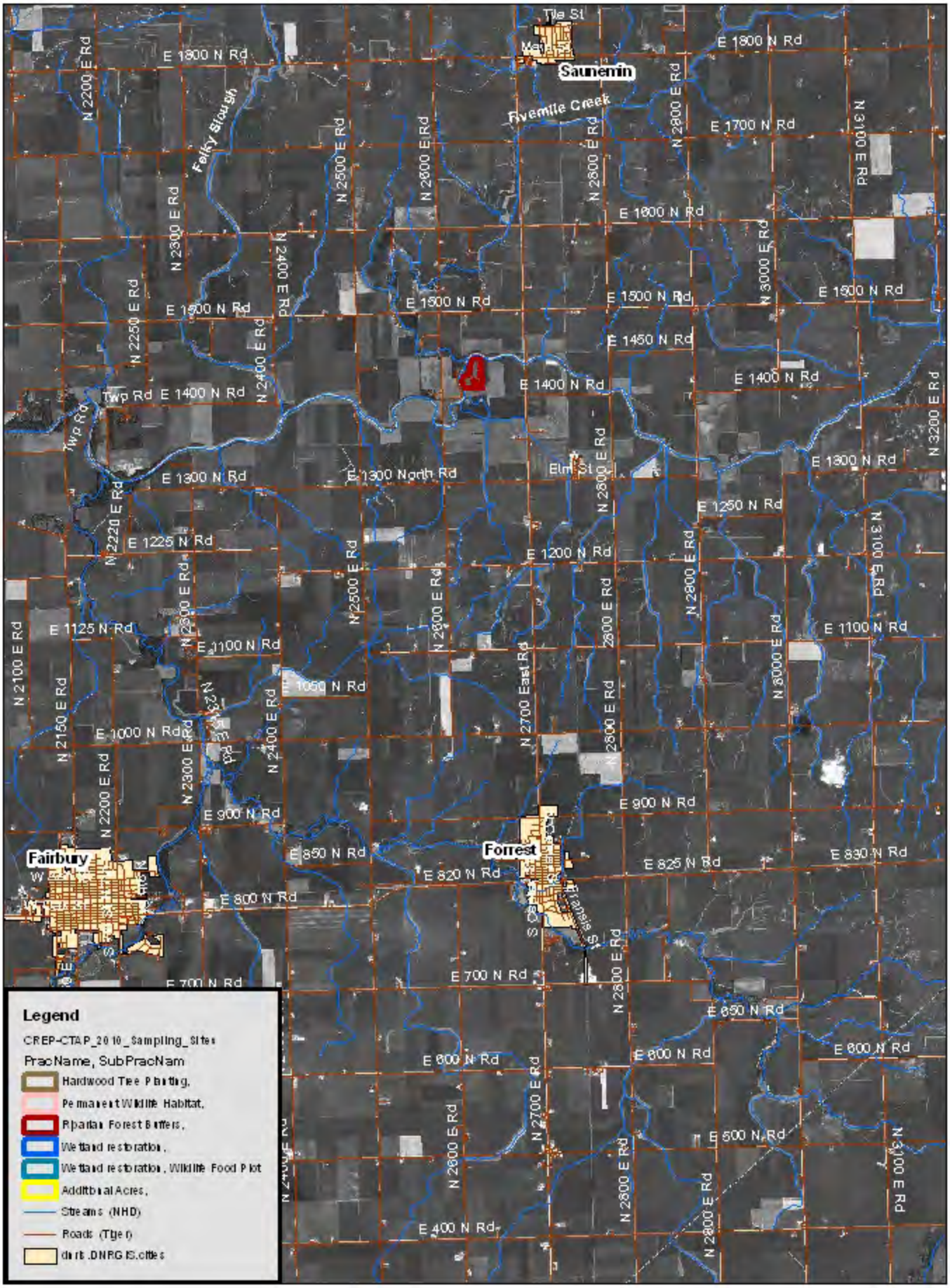
Table 4. Average species richness of grassland and wetland sites sampled as part of the Critical Trends Assessment Program between 1997 and 2006. Random sites are those that are randomly selected based on predetermined habitat criteria (Molano-Flores 2003). Reference sites are those that were selected based on their high vegetation quality and generally high ecological integrity. Most reference sites are dedicated Illinois Nature Preserves. These data are based on species sampled in 20 ¼ $m^2$ quadrats at each site.

| | Native Species | Non-native Species | Total Species | Native Species (% cover) | Non-native Species (% cover) |
|---|---|---|---|---|---|
| **Random Grassland (n=159)** | 9.84 | 7.18 | 17.32 | 23.99 | 75.59 |
| **Random Prairie (n=14)** | 24.14 | 5.64 | 30.07 | 69.75 | 30.13 |
| **Reference Prairie (n=11)** | 41.00 | 2.73 | 44.82 | 97.14 | 2.49 |
| **Random Wetland (n=169)** | 12.38 | 2.46 | 15.16 | 60.31 | 38.98 |
| **Reference Wetland (n=11)** | 24.09 | 1.27 | 25.82 | 94.06 | 5.72 |

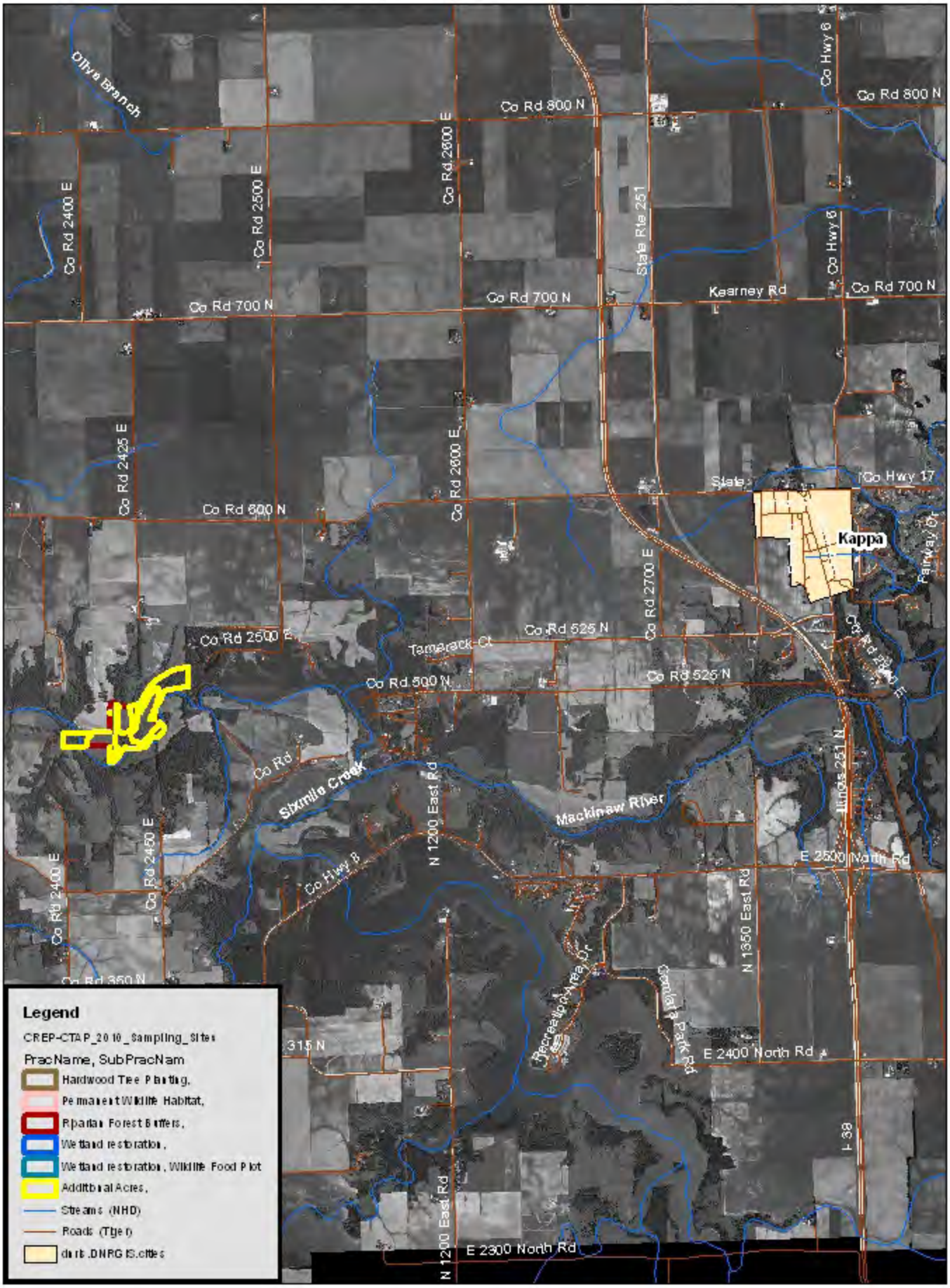
Figure 2. INHS CTAP and IDNR biologists assessed vegetation and recorded observations at eight CREP sites across central Illinois during June and September 2010.

Figure 3. Examples of wildlife observed during site visits (e.g. butterflies).

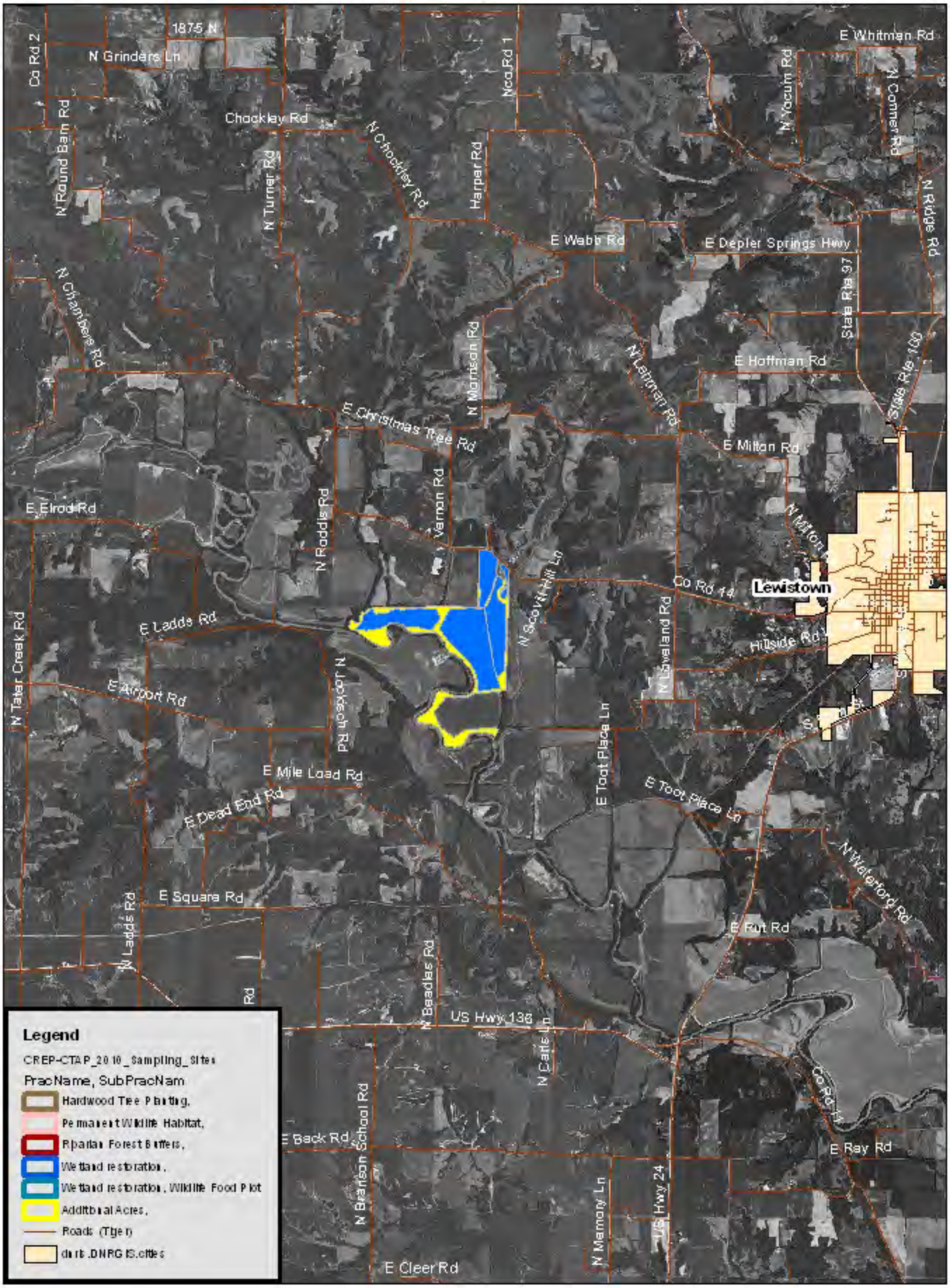
# CREP 2010 Sampling Site #2 - Livingston Co



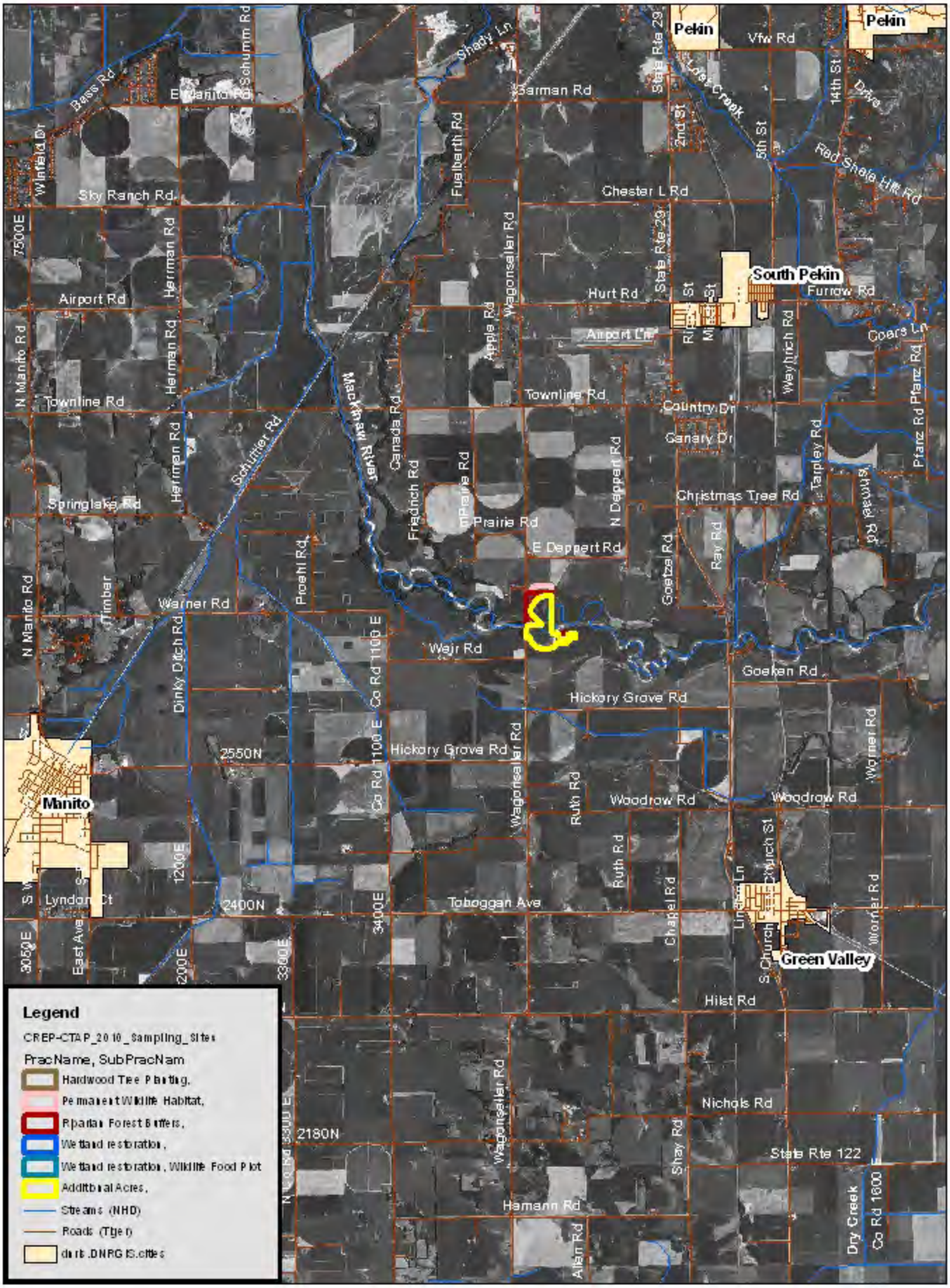
# CREP 2010 Sampling Site #3 - Woodford Co



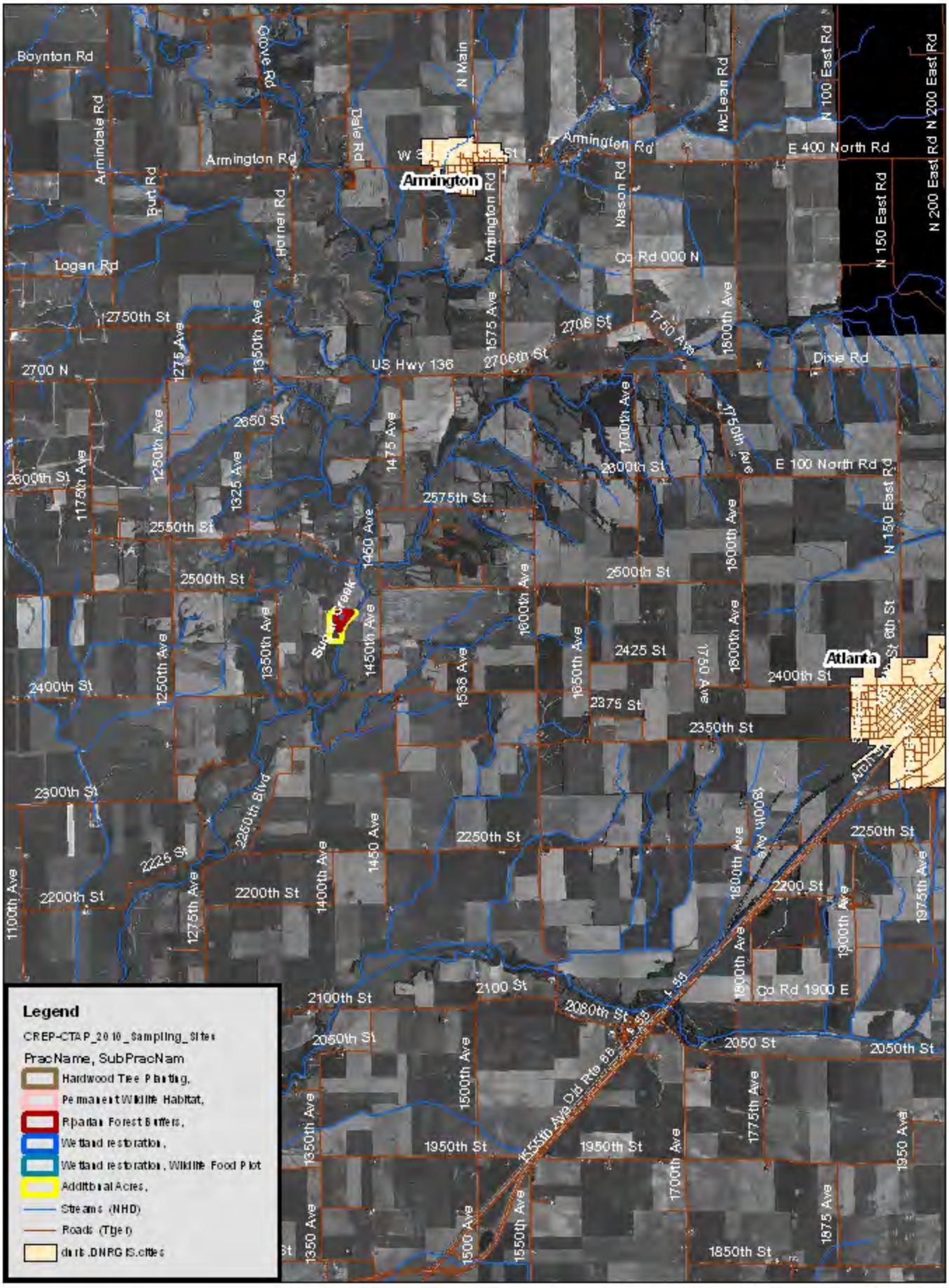
# CREP 2010 Sampling Site #4 - Fulton Co



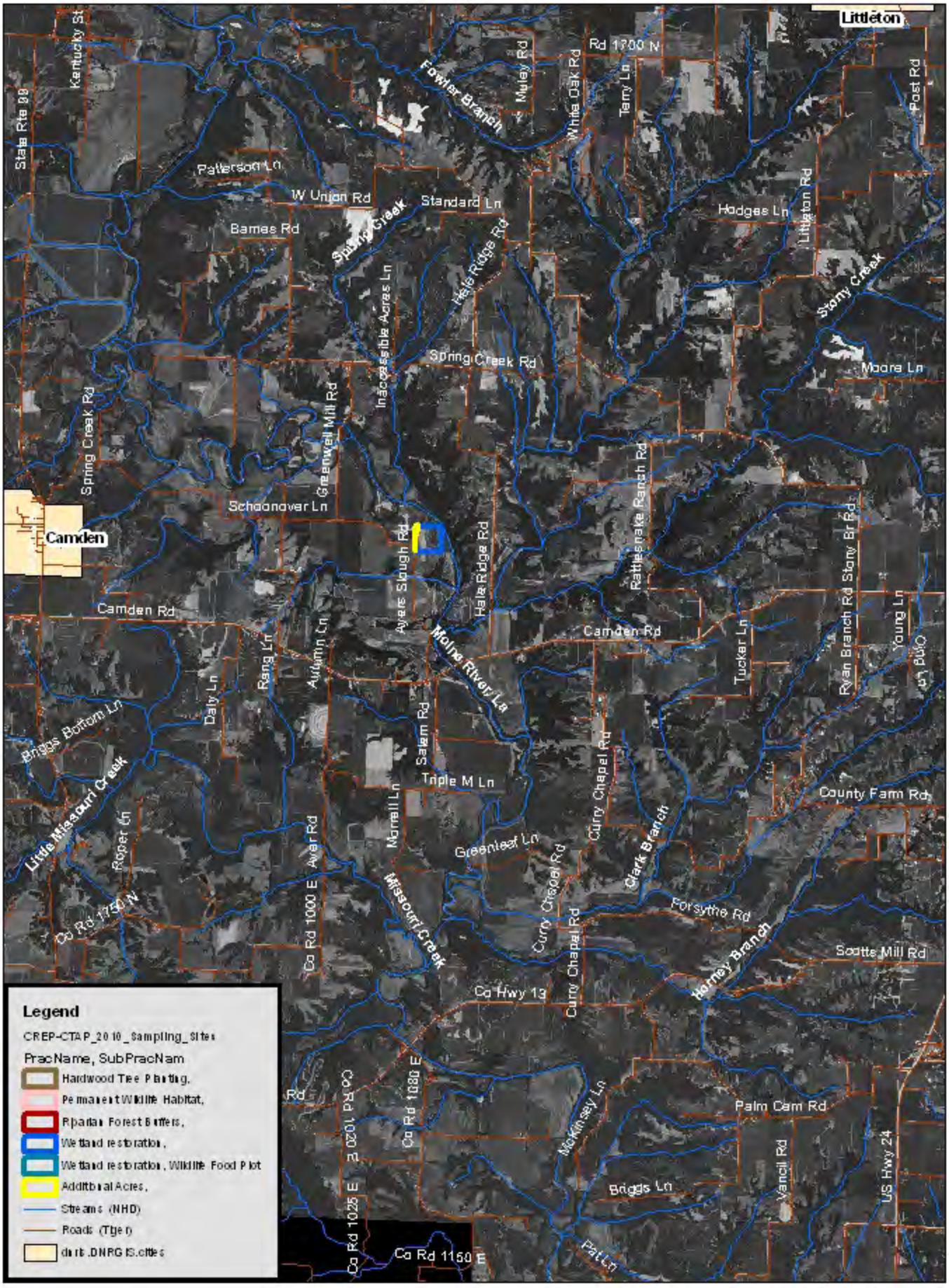
# CREP 2010 Sampling Site #5 - Tazewell Co



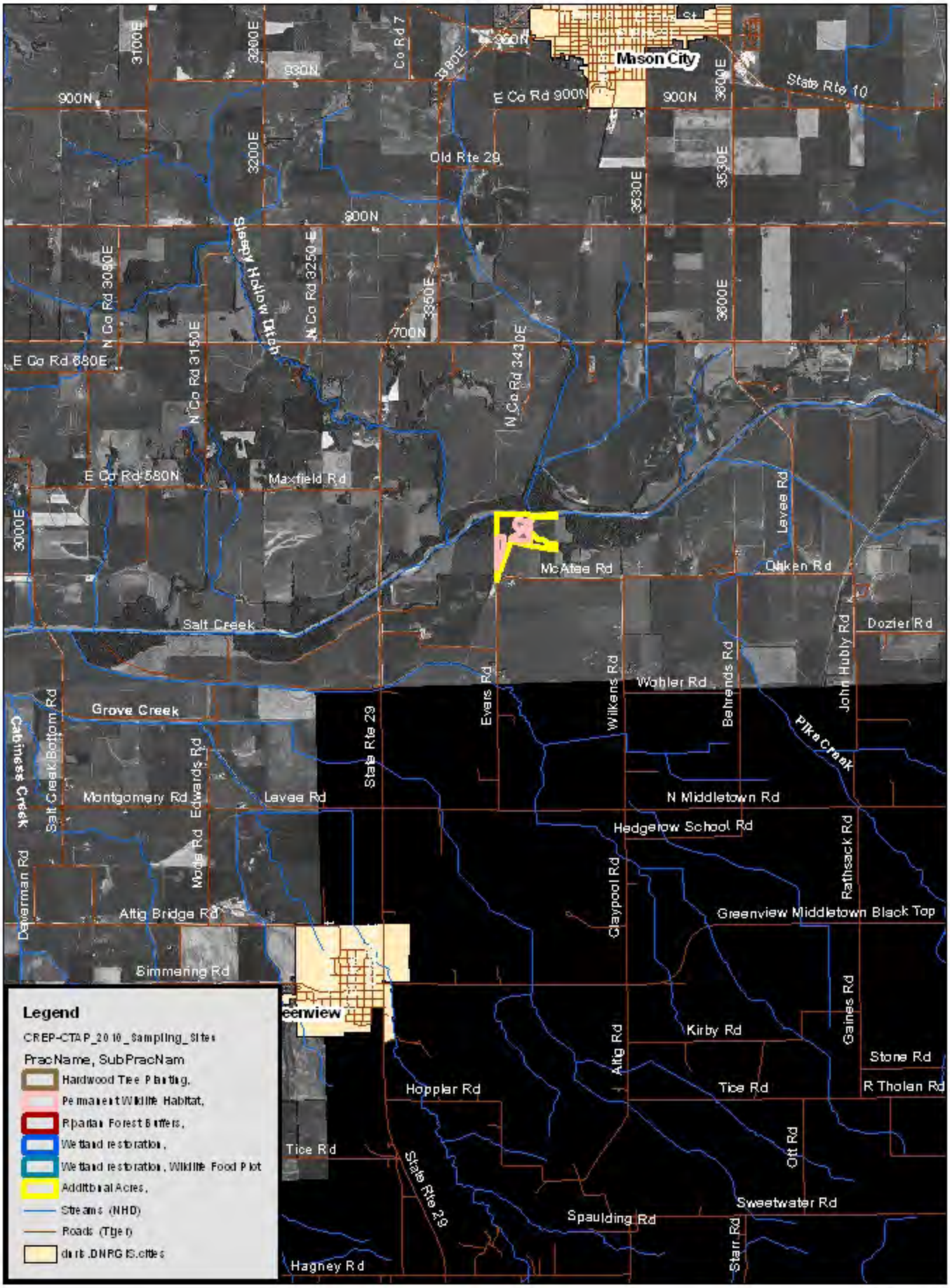
# CREP 2010 Sampling Site #6 - Logan Co



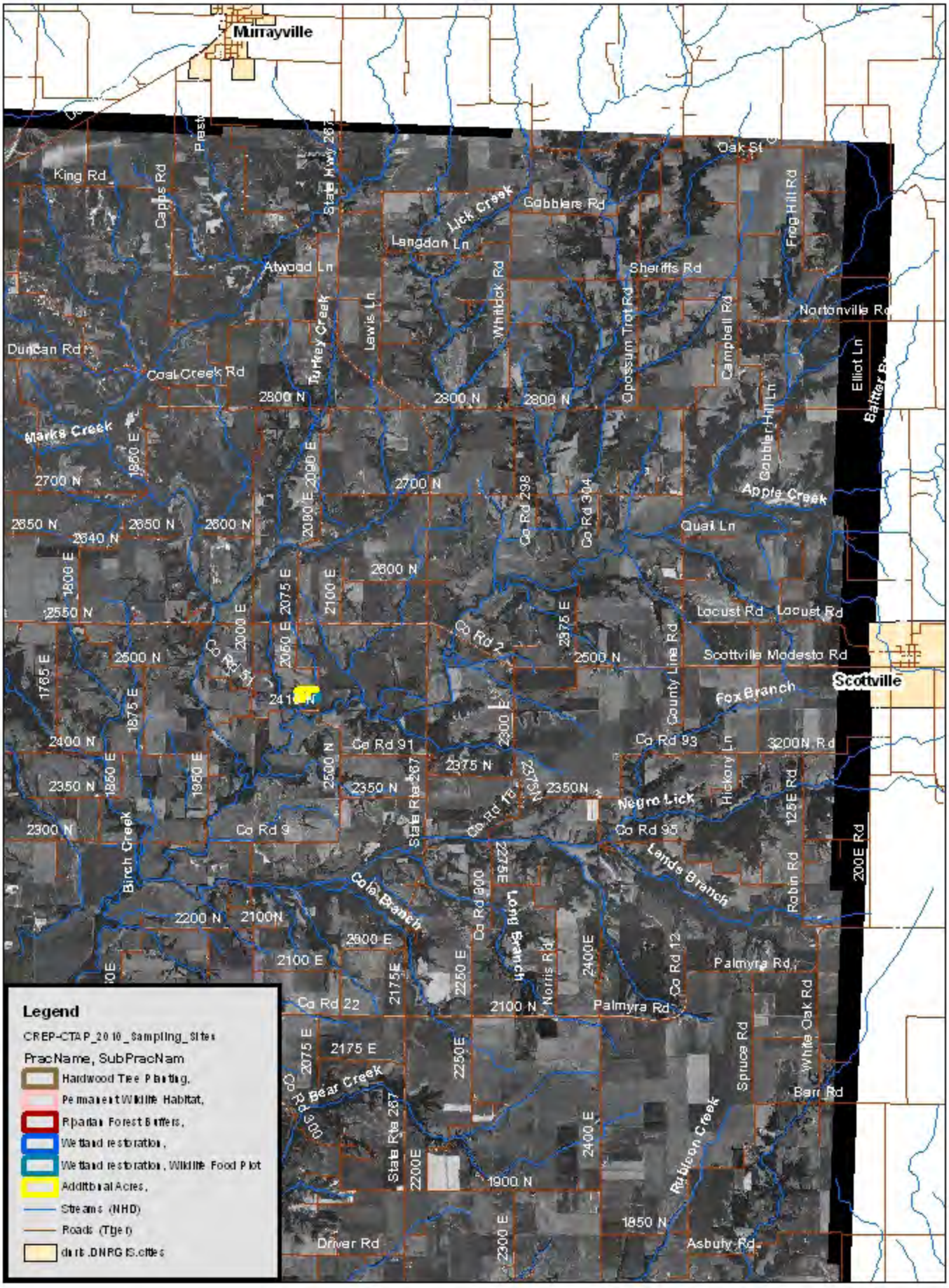
# CREP 2010 Sampling Site #7 - Schuyler Co



# CREP 2010 Sampling Site #8 - Menard Co



# CREP 2010 Sampling Site #9 - Greene Co



# APPENDIX 2

## Site Photos 2010

Site #2 Livingston County

Site #3 Woodford County


Site #4 Fulton County


Site #5 Tazewell County


Site #6 Logan County


Site #7 Schuyler County


Site #8 Menard County


Site #9 Greene County

# APPENDIX 3

## Site Descriptions and Species Lists

**Pilot Study Site Number**: 2
**Landowner**: Richard Miller
**County**: Livingston
**State ID**: 19990058
**Practices and Acreage**: CP22 (Riparian Forest Buffers), 37 acres
**Year implemented or enrolled**: 1999 (15 yr.)

**Date of Site Visit**: 15 September 2010
**Investigators**: James Ellis and Jessica Forrest
**Duration of visit**: 2.25 hours
**Visit Notes:** The investigators met with the landowner who took them back to the CREP practice and accompanied them during the site visit.

**General Vegetation Structure**: Much of the practice was dominated by herbaceous vegetation ranging between three to four feet tall with some areas of taller forbs. A few areas were unusually short reaching at most two to three feet. Trees both planted and adventive were scattered throughout the site ranging from about two feet up to eight feet tall. It was easy to see across most of the field.

**Dominant plant species noted**: Dominant species included yellow foxtail, common goldenrod, tall boneset, and hairy aster. Planted oak trees were evident.

**General notes**: This CREP practice is on low ground in a bend of the North Fork of the Vermilion River, and historically this land was probably forested floodplain. Much of site floods occasionally during the spring, and the landowner noted there was water on the site earlier this year.

The landowner planted bare root stock trees in 2000 in rows 15 feet apart, and mowed between the rows for a few years. He also replanted some of the trees at a later date. Oaks (white, swamp white, bur, and pin) were evident during the visit ranging from about three to over five feet tall. Deer browse was evident on almost every oak tree examined. Other tree species both planted (e.g. green ash, wild black cherry) and adventive (e.g. eastern cottonwood) were taller reaching up to eight feet. A row of osage orange trees planted as seeds by landowner was growing well on the east side of the site.

One patch of the invasive reed canary grass was observed on the west side of the site not far from the river.

**Other:** A thin strip of floodplain forest separated the CREP practice from the river on the north and west sides. Dominant trees included eastern cottonwood, honey locust, and silver maple. Large stands of the invasive amur honeysuckle were also noted.

***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

| Scientific Name | Common Name | Origin | Notes |
|---|---|---|---|
| Ambrosia artemisiifolia | common ragweed | N | |
| Ambrosia trifida | giant ragweed | N | some thick patches |
| Apocynum cannabinum | dogbane | N | |
| Asclepias syriaca | common milkweed | N | |
| Asclepias verticillata | horsetail milkweed | N | |
| Aster ericoides | heath aster | N | small patch |
| Aster pilosus | hairy aster | N | |
| Bidens sp. | beggar's ticks | N | |
| Bromus inermis | Hungarian brome | I | |
| Carya ovata | shagbark hickory | N | very short |
| Cassia fasciculata | golden cassia | N | |
| Cephalanthus occidentalis | buttonbush | N | |
| Cirsium discolor | pasture thistle | N | |
| Crataegus mollis | downy hawthorn | N | small, adventive |
| Daucus carota | Queen Anne's lace | I | |
| Desmodium canadense | showy tick trefoil | N | |
| Elymus canadensis | Canada wild rye | N | |
| Elymus virginicus | Virginia wild rye | N | |
| Eupatorium altissimum | tall boneset | N | |
| Fraxinus pennsylvanica var. subintegerrima | green ash | N | planted, few 8-10' |
| Gleditsia triacanthos | honey locust | N | 5-6' |
| Juglans nigra | black walnut | N | planted, few 8-10' |
| Lactuca canadensis | wild lettuce | N | |
| Lonicera maackii | amur honeysuckle | I | thick along edges of field |
| Maclura pomifera | hedge apple | I | scattered, 5-8', planted row on E side |
| Melilotus sp. | sweet clover | I | |
| Oenothera biennis | common evening primrose | N | |
| Phalaris arundinacea | reed canary grass | I | patches on west side |
| Plantago rugelii | red-stalked plantain | N | |
| Platanus occidentalis | sycamore | N | |
| Poa pratensis | Kentucky blue grass | I | |
| Populus deltoides | eastern cottonwood | N | few, 6-7' |
| Prunus serotina | wild black cherry | N | planted |
| Quercus palustris | pin oak | N | planted by seed, N side |
| Quercus bicolor | swamp white oak | N | planted, 5-6' |
| Quercus macrocarpa | burr oak | N | 5' |

| | | | |
|---|---|---|---|
| Quercus rubra | northern red oak | N | |
| Quercus stellata | post oak | N | not a positive ID |
| Rosa multiflora | Japanese rose | I | |
| Setaria faberi | giant foxtail | I | |
| Setaria glauca | yellow foxtail | I | |
| Solidago canadensis | common goldenrod | N | |
| Taxodium distichum | bald cypress | N | planted |
| Toxicodendron radicans | poison ivy | N | some big patches |
| Trifolium pratense | red clover | I | |
| Ulmus rubra | slippery elm | N | |
| Vitis riparia | riverbank grape | N | |

**Pilot Study Site Number**: 3
**Landowner**: Dan Thompson
**County**: Woodford
**State ID**: 2001851
**Practices and Acreage**: CP 22 (Riparian Forest Buffers), 30.1; ADD (Additional Acres), 22.1
**Year implemented or enrolled**: 2001 (PERM)

**Date of Site Visit**: 15 September 2010
**Investigators**: James Ellis and Jessica Forrest
**Duration of visit**: 2 hours
**Visit Notes:** The investigators met with the landowner who led them back to the CREP practice. Access to the site is through the landowner's cattle pasture and gates with electric fences needed to be opened and monitored by the landowner.

**General Vegetation Structure**: The CREP practices were dominated by fairly tall (four to five feet) and lush herbaceous vegetation with scattered trees evident. Trees dominated some portions of the fields especially closer the to river.

**Dominant plant species noted**: Common goldenrod dominated much of the practice; sycamore and box elder dominated areas close to the river.

**General notes**: There are three fields at this site that all sit within the floodplain of the Mackinaw River, and these field occasionally flood. Planted oaks and pecans are evident and growing well in areas that are topographically higher within the fields. Scattered oaks eight to twelve feet tall are particularly evident in the 6-acre field. Adventive tree species are dominant in areas that are a bit lower and closer to the river. These species included sycamore, eastern cottonwood, box elder, honey locust, and green ash, and they ranged from ten to twenty feet tall. The trees were especially tall and thick at the south end of the 13-acre field.

A few invasive woody species scattered through the practices included autumn olive and amur honeysuckle.

**Other:** The landowner maintains mowed paths around the practices, which facilitated access during the visit. The landowner also said he mowed and sprayed herbicide between the tree rows up until about a year ago. These fields were flooded earlier in the year, but impacts from flooding this were not particularly evident based on the current vegetation.

***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

| Scientific Name | Common Name | Origin | Notes |
|---|---|---|---|
| Acer negundo | boxelder | N | closer to river, 10-12' |
| Acer saccharinum | silver maple | N | saplings |
| Agrostis alba | red top | N | |
| Amaranthus sp. | pigweed | . | |
| Asclepias syriaca | common milkweed | N | |

| | | | |
|---|---|---|---|
| Aster pilosus | hairy aster | N | |
| Aster simplex | panicled aster | N | |
| Bidens frondosa | common beggar's ticks | N | |
| Carya illinoensis | pecan | N | planted, 5-6' |
| Cirsium arvense | field thistle | I | |
| Dactylis glomerata | orchard grass | I | |
| Diospyros virginiana | persimmon | N | small, planted |
| Echinochloa crusgalli | barnyard grass | I | |
| Elaeagnus umbellata | autumn olive | I | scattered, big shrubs |
| Festuca arundinacea | tall fescue | I | |
| Fraxinus pennsylvanica var. subintegerrima | green ash | N | |
| Gleditsia triacanthos | honey locust | N | adventive, 8-10' |
| Helianthus hirsutus | bristly sunflower | N | |
| Impatiens capensis | spotted touch-me-not | N | |
| Juglans nigra | black walnut | N | planted?, 3' |
| Juniperus virginiana | eastern red cedar | N | few, 8' |
| Leersia oryzoides | rice cut grass | N | |
| Lobelia siphilitica | great blue lobelia | N | |
| Lonicera maackii | amur honeysuckle | I | scattered, big shrubs |
| Morus alba | white mulberry | I | |
| Muhlenbergia schreberi | nimblewill | N | |
| Oenothera biennis | common evening primrose | N | |
| Panicum sp. | panic grass | . | |
| Pastinaca sativa | wild parsnip | I | |
| Phalaris arundinacea | reed canary grass | I | |
| Phyla lanceolata | fog fruit | N | |
| Plantago rugelii | red-stalked plantain | N | |
| Platanus occidentalis | sycamore | N | few, 8-10' |
| Poa pratensis | Kentucky blue grass | I | |
| Polygonum hydropiperoides | mild water pepper | N | |
| Polygonum persicaria | lady's thumb | I | |
| Populus deltoides | eastern cottonwood | N | scattered, 5-8' |
| Prunus serotina | wild black cherry | N | 3-4' |
| Ptelea trifoliata | wafer ash | N | |
| Quercus alba | white oak | N | planted, 3-8' |
| Quercus bicolor | swamp white oak | N | planted, 8' |
| Quercus macrocarpa | burr oak | N | planted, 3-8' |
| Quercus palustris | pin oak | N | planted, 8' |
| Quercus rubra | northern red oak | N | planted, 8-12' |
| Rubus pensylvanicus | Yankee blackberry | N | |
| Rudbeckia laciniata | wild golden glow | N | |
| Ruellia strepens | smooth ruellia | N | |
| Rumex crispus | curly dock | I | |
| Salix nigra | black willow | N | |
| Setaria glauca | yellow foxtail | I | |
| Solanum carolinense | horse nettle | N | |
| Solidago canadensis | common goldenrod | N | |
| Ulmus americana | American elm | N | |

| | | |
|---|---|---|
| Ulmus rubra | slippery elm | N |
| Urtica dioica | tall nettle | N |
| Verbesina alternifolia | wingstem | N |
| Vitis riparia | riverbank grape | N |
| Xanthium strumarium | cocklebur | N |

**Pilot Study Site Number**: 4
**Landowner**:
**County**: Fulton
**State ID**: 20000439
**Practices and Acreage**: CP23 (Wetland Restoration), 279.5 acres; ADD (Additional Acres), 110.7 acres
**Year implemented or enrolled**: 2000 (PERM)

**Date of Site Visit**: 9 September 2010
**Investigators**: James Ellis, Tim Rye, and Rachel Pirkle
**Duration of visit**: 1.75 hours
**Visit Notes:** This is a fairly large site, and because of time constraints, all CREP practices were not thoroughly explored. Site evaluation was facilitated by driving on mowed paths between fields with occasional forays into a field.

**General Vegetation Structure**: Trees characterized all of the CREP practices except for one. Planted and adventive trees ranging from eight to over fifteen feet tall were a dominant feature. Where there was space between trees, a thick and diverse growth of herbaceous vegetation covered the ground.

**Dominant plant species noted**: Planted trees dominated and they included bur oak, sycamore, river birch, green ash, white oak, and pin oak. Eastern cottonwood was thick in some areas. Dominant herbs included giant foxtail, tall boneset, common goldenrod, and giant ragweed.

**General notes**: Two different treatments were noted at this site: tree planting or not. One field at the north end of the site to the west of the access lane was dominated by tall boneset with only a few scattered trees which included eastern cottonwood, eastern red cedar, wild black cherry, and black willow. Other herbs included prairie cord grass, big bluestem, Indian grass, barnyard grass, switch grass, and common goldenrod. The north end of the field was much wetter as reflected in the vegetation: prairie cord grass, reed canary grass, blue vervain, and soft-stem bulrush.

Trees dominated the other three fields, which comprised the majority of the site. Some areas had grown tall and thick enough to form a canopy. In these areas, herbaceous ground cover vegetation was sparse. This was especially noted at the south end of the site where approximately fifteen-foot tall eastern cottonwoods were the dominant vegetation.

Some areas within the fields and along the access land were fairly wet with some standing water and saturated soils.

**Other:** During the visit, the investigators walked into the north field on what appeared to be tractor tire tracks. Vegetation had been smashed down and what appeared to be soybeans were scattered along these tire tracks.

***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

| Scientific Name | Common Name | Origin | Notes |
|---|---|---|---|
| **N field to E of lane** | | | |
| Agrostis alba | red top | N | |
| Agrostis hyemalis | hair grass | N | |
| Ambrosia trifida | giant ragweed | N | dominant |
| Asclepias syriaca | common milkweed | N | |
| Aster pilosus | hairy aster | N | |
| Aster simplex | panicled aster | N | |
| Betula nigra | river birch | N | planted, 10-12' |
| Bidens aristosa | swamp marigold | N | |
| Bromus inermis | Hungarian brome | I | |
| Carex lacustris | common lake sedge | N | |
| Carex sp. | sedge | N | wet spot on S end |
| Cirsium discolor | pasture thistle | N | |
| Echinochloa crusgalli | barnyard grass | I | wet spot on S end |
| Elaeagnus umbellata | autumn olive | I | dead stems |
| Eleocharis obtusa | blunt spike rush | N | wet spot on S end |
| Erechtites hieracifolia | fireweed | N | |
| Eupatorium serotinum | late boneset | N | dominant |
| Fraxinus pennsylvanica var. subintegerrima | green ash | N | planted, 8' |
| Lemna minor | small duckweed | N | in wet ditch |
| Lindernia dubia | false pimpernel | N | wet spot on S end |
| Lycopus americanus | common water horehound | N | wet spot on S end |
| Pastinaca sativa | wild parsnip | I | |
| Phalaris arundinacea | reed canary grass | I | scattered patches |
| Platanus occidentalis | sycamore | N | many, scattered, 10-12' |
| Polygonum pensylvanicum | pinkweed | N | |
| Populus deltoides | eastern cottonwood | N | seedlings, scattered trees 15' |
| Quercus alba | white oak | N | planted, 5-6' |
| Quercus macrocarpa | burr oak | N | planted, 10' |
| Quercus palustris | pin oak | N | planted, 5-6' |
| Rumex crispus | curly dock | I | |
| Salix nigra | black willow | N | small |
| Setaria faberi | giant foxtail | I | dominant |
| Setaria glauca | yellow foxtail | I | |
| Solidago canadensis | common goldenrod | N | dominant |
| Spartina pectinata | prairie cord grass | N | wet spot on S end |
| Taxodium distichum | bald cypress | N | planted, 8-10' |
| Xanthium strumarium | cocklebur | N | |
| **N field to W of lane** | | | |
| Acalypha rhomboidea | three-seeded mercury | N | |
| Agropyron repens | quack grass | I | |
| Ambrosia artemisiifolia | common ragweed | N | |
| Andropogon gerardii | big bluestem | N | |
| Asclepias syriaca | common milkweed | N | |
| Aster lateriflorus | side-flowering aster | N | wetter area at N end |

| | | | |
|---|---|---|---|
| Bidens frondosa | common beggar's ticks | N | |
| Cirsium discolor | pasture thistle | N | |
| Conyza canadensis | horseweed | N | |
| Cyperus esculentus | field nut sedge | N | wetter area at N end |
| Echinochloa crusgalli | barnyard grass | I | big patches |
| Eupatorium serotinum | late boneset | N | dominant |
| Juncus nodosus | joint rush | N | wetter area at N end |
| Juniperus virginiana | eastern red cedar | N | few, small |
| Lobelia siphilitica | great blue lobelia | N | |
| Lycopus americanus | common water horehound | N | |
| Lythrum alatum | winged loosestrife | N | wetter area at N end |
| Oenothera biennis | common evening primrose | N | |
| Panicum capillare | old witch grass | N | |
| Panicum dichotomiflorum | fall panicum | N | |
| Panicum virgatum | prairie switch grass | N | |
| Phalaris arundinacea | reed canary grass | I | |
| Polygonum pensylvanicum | pinkweed | N | |
| Populus deltoides | eastern cottonwood | N | few, scattered, 10-15' |
| Prunus serotina | wild black cherry | N | 6-8' |
| Salix exigua | sandbar willow | N | patch 8-10' |
| Salix nigra | black willow | N | 6-8' |
| Scirpus tabernaemontanii | soft-stem bulrush | N | wetter area at N end |
| Setaria faberi | giant foxtail | I | |
| Silphium perfoliatum | cup plant | N | wetter area at N end |
| Solidago canadensis | common goldenrod | N | |
| Sorghastrum nutans | Indian grass | N | |
| Spartina pectinata | prairie cord grass | N | thick patches along access lane |
| Tripsacum dactyloides | gama grass | N | |
| Typha latifolia | broad-leaved cattail | N | wetter area at N end |
| Ulmus rubra | slippery elm | N | saplings |
| Verbena hastata | blue vervain | N | wetter area at N end |
| **S field to W of lane** | | | |
| Acer saccharinum | silver maple | N | seedlings |
| Amaranthus sp. | pigweed | . | |
| Ambrosia trifida | giant ragweed | N | |
| Apocynum cannabinum | dogbane | N | |
| Aster lateriflorus | side-flowering aster | N | |
| Bidens frondosa | common beggar's ticks | N | |
| Convolvulus arvensis | field bindweed | I | |
| Elymus virginicus | Virginia wild rye | N | |
| Morus alba | white mulberry | I | seedlings |
| Phalaris arundinacea | reed canary grass | I | |
| Polygonum coccineum | water smartweed | N | |
| Polygonum pensylvanicum | pinkweed | N | |
| Populus deltoides | eastern cottonwood | N | thick at south end, 15' |
| Quercus palustris | pin oak | N | common, scattered, |

| | | | |
|---|---|---|---|
| Sagittaria latifolia | common arrowhead | N | 8-10' in wet ditch along lane |
| Spartina pectinata | prairie cord grass | N | thick patches along access lane |
| Xanthium strumarium | cocklebur | N | |

**Pilot Study Site Number**: 5
**Landowner**: Henry Garlisch
**County**: Tazewell
**State ID**: 20071293
**Practices and Acreage**: CP4D (Permanent Wildlife Habitat), 7.1; CP22 (Riparian Forest Buffers), 18.8; ADD (Additional Acres), 66.79
**Year implemented or enrolled**: 2007 (PERM)

**Date of Site Visit**: 29 June 2010
**Investigators**: James Ellis and Jessica Forrest
**Duration of visit**: 4 hours
**Visit Notes:** The CREP practices on this site were assessed, but due to limited access, the Additional Acres were not assessed. This was the first site visited for the 2010 field season.

**General Vegetation Structure**: The vegetation structure varied depending on the practice and management of a particular field. Fields 1 and 3 were planted with trees, which were about six to eight feet tall with an understory of grass and forbs ranging from two to five feet tall. Field 1A had been recently mowed. Fields 4 and 5 were dominated by two to three foot tall grass with scattered forbs.

**Dominant plant species noted**: Planted oaks, common goldenrod, tall boneset, sweet clover, smooth brome, and poison ivy dominated Fields 1 and 3. Smooth brome dominated fields 4 and 5.

**General notes**: Planted white oak, bur oak, green ash, red oak, swamp white oak, and black walnut ranging about six to ten feet tall were evident and dominant in Field 1. Most of the trees had canopies touching with few open spaces. Trees in Field 3 were evident, but seemingly not as abundant possibly due to more frequent flooding in this field. Six to eight foot tall black walnut, green ash, and bur oak were noted. Poison ivy was especially this in this field along with common goldenrod.

Field 1A on the north had been mowed recently, so it was difficult to evaluate the vegetation. Stumps of small trees and shrubs were noted as well as Canada thistle, barnyard grass, side oats grama, tall fescue, and smooth brome.

Fields 4 and 5 were almost solid smooth brome. There were a few patches of common goldenrod and other forbs in Field 5. Field 4 is a thin strip of land sandwiched between the Mackinaw River and a row-crop ag field. Weedy forbs were more evident here probably due to disturbance from the river and field edge.

**Other:** Due to recent heavy rains, the Mackinaw River, which runs through part of the property, was running high and strong. The river marks the north edge of Field 4. This outside curve of a bend in the river had been cutting into the river as evident by the steep cut bank (bare dirt exposed, about six foot drop straight down from the top of the bank to the water). There were some chunks of soil and vegetation, which had evidently slid into the river. As the river moves

and eats away at Field 4, should the original dimensions of the field be maintained to comply with the CREP contract?

***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

| Scientific Name | Common Name | Origin | Notes |
|---|---|---|---|
| **Field 1, 12.6 acres** | | | |
| Ambrosia artemisiifolia | common ragweed | N | |
| Ambrosia trifida | giant ragweed | N | |
| Asclepias syriaca | common milkweed | N | |
| Boehmeria cylindrica | false nettle | N | |
| Bouteloua curtipendula | side-oats grama | N | |
| Bromus commutatus | hairy brome | I | |
| Bromus inermis | Hungarian brome | I | dominant |
| Campsis radicans | trumpet creeper | N | |
| Celtis occidentalis | hackberry | N | saplings |
| Cirsium arvense | field thistle | I | |
| Convolvulus arvensis | field bindweed | I | |
| Conyza canadensis | horseweed | N | |
| Cornus sp. | dogwood | N | |
| Dactylis glomerata | orchard grass | I | |
| Dalea purpurea | purple prairie clover | N | |
| Dipsacus laciniatus | cut-leaved teasel | I | big patches |
| Elaeagnus umbellata | autumn olive | I | few, scattered |
| Erigeron annuus | annual fleabane | N | |
| Eupatorium serotinum | late boneset | N | |
| Festuca arundinacea | tall fescue | I | |
| Fraxinus pennsylvanica var. subintegerrima | green ash | N | 8-10'' |
| Gleditsia triacanthos | honey locust | N | saplings |
| Juglans nigra | black walnut | N | 8-10' |
| Melilotus alba | white sweet clover | I | big patches |
| Morus alba | white mulberry | I | small |
| Panicum virgatum | prairie switch grass | N | |
| Poa pratensis | Kentucky blue grass | I | |
| Populus deltoides | eastern cottonwood | N | small |
| Prunus serotina | wild black cherry | N | small |
| Quercus rubra | northern red oak | N | planted, 8-10' |
| Quercus alba | white oak | N | planted, 6-8' |
| Quercus bicolor | swamp white oak | N | planted, 8-10' |
| Quercus macrocarpa | burr oak | N | planted, 6-8' |
| Schizachyrium scoparium | little bluestem | N | |
| Silphium perfoliatum | cup plant | N | |
| Solidago canadensis | common goldenrod | N | |
| Ulmus pumila | Siberian elm | I | 8-10' |
| Urtica dioica | tall nettle | N | |
| Vitis riparia | riverbank grape | N | |

| | | | |
|---|---|---|---|
| **Field 5, 7.3 acres** | | | |
| Bromus inermis | Hungarian brome | I | dominant |
| Solidago canadensis | common goldenrod | N | |
| Rumex altissimus | pale dock | N | |
| **Field 4, 3.1 acres** | | | |
| Abutilon theophrasti | buttonweed | I | |
| Amaranthus sp. | pigweed | . | |
| Ambrosia trifida | giant ragweed | N | |
| Apocynum cannabinum | dogbane | N | |
| Aster pilosus | hairy aster | N | |
| Bromus inermis | Hungarian brome | I | dominant |
| Chenopodium album | lamb's quarters | I | |
| Conium maculatum | poison hemlock | I | |
| Convolvulus arvensis | field bindweed | I | |
| Datura stramonium | jimsonweed | I | |
| Humulus japonicus | Japanese hops | I | |
| Lactuca serriola | prickly lettuce | I | |
| Morus alba | white mulberry | I | small |
| Phytolacca americana | pokeweed | N | |
| Rumex altissimus | pale dock | N | |
| Rumex crispus | curly dock | I | |
| Solidago canadensis | common goldenrod | N | |
| Solidago gigantea | late goldenrod | N | |
| Sisymbrium loeselii | tall hedge mustard | I | |
| Teucrium canadense | germander | N | |
| Xanthium strumarium | cocklebur | N | |
| **Field 3, 2.9 acres** | | | |
| Ambrosia trifida | giant ragweed | N | |
| Apocynum cannabinum | dogbane | N | |
| Erigeron annuus | annual fleabane | N | |
| Eupatorium altissimum | tall boneset | N | |
| Fraxinus pennsylvanica | red ash | N | planted, 6-10' |
| Gleditsia triacanthos | honey locust | N | |
| Ipomoea pandurata | wild sweet potato | N | |
| Juglans nigra | black walnut | N | planted, 6-8' |
| Laportea canadensis | Canada wood nettle | N | |
| Melilotus alba | white sweet clover | I | |
| Quercus macrocarpa | burr oak | N | planted, 6-8' |
| Rudbeckia laciniata | wild golden glow | N | |
| Solidago canadensis | common goldenrod | N | dominant |
| Teucrium canadense | germander | N | |
| Toxicodendron radicans | poison ivy | N | dominant |
| Ulmus pumila | Siberian elm | I | |
| Urtica dioica | tall nettle | N | |
| Verbena urticifolia | white vervain | N | |

**Pilot Study Site Number**: 6
**Landowner**: Jeff Faulk
**County**: Logan
**State ID**: 20010760
**Practices and Acreage**: CP22 (Riparian Forest Buffers), 7.5 acres; ADD (Additional Acres), 19.7 acres
**Year implemented or enrolled**: 2001 (PERM)

**Date of Site Visit**: 2 September 2010
**Investigator**: James Ellis
**Duration of visit**: 1.5
**Visit Notes:** Foot access to the site is from the east with a walk on a homemade suspension bridge over Sugar Creek. The creek was flowing strong from recent rainfall. The CREP practice on-site was evaluated but the adjacent woodland enrolled as Additional Acres was not. A mowed path on the north edge of the field facilitated assessment.

**General Vegetation Structure**: The field was characterized by a thick growth of herbaceous plants ranging from four to five feet high. The investigator could easily see across the field, but the lush growth of plants made walking through the field difficult. A few small trees were present.

**Dominant plant species noted**: Common goldenrod and Kentucky bluegrass dominated much of the practice. Patches of reed canary grass and rice cut grass were dominant in lower, wetter parts of the field.

**General notes**: This field sits partly within the floodplain of Sugar Creek. The west side of the field is the highest point and the land slopes gently to east towards the creek. Sugar Creek probably occasionally floods a portion of this field, but there was no evidence of flooding in the field this season. The east portion of the field was wetter as evidenced by the plant species.

The investigator noted a few small oak trees and dogwood shrubs and these were assumed to have been planted. At most these woody plants were three to four feet tall and looked to have been browsed by whitetail deer.

**Other:**

***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

| Scientific Name | Common Name | Origin | Notes |
|---|---|---|---|
| Acalypha rhomboidea | three-seeded mercury | N | |
| Ambrosia trifida | giant ragweed | N | |
| Apocynum cannabinum | dogbane | N | |
| Aster lateriflorus | side-flowering aster | N | |
| Aster pilosus | hairy aster | N | common |
| Aster simplex | panicled aster | N | |

| | | | |
|---|---|---|---|
| Calamagrostis canadensis | blue joint grass | N | |
| Calystegia sepium | American bindweed | N | |
| Carex sp. | sedge | N | |
| Carex tribuloides | awl-fruited oval sedge | N | |
| Carex vulpinoidea | brown fox sedge | N | |
| Cinna arundinacea | common wood reed | N | |
| Cirsium discolor | pasture thistle | N | |
| Cornus drummondii | rough-leaved dogwood | N | small, browsed, planted? |
| Cyperus strigosus | long-scaled nut sedge | N | |
| Echinochloa crusgalli | barnyard grass | I | |
| Elaeagnus umbellata | autumn olive | I | scattered shrubs, 6-8' |
| Epilobium coloratum | cinnamon willow herb | N | |
| Eupatorium altissimum | tall boneset | N | |
| Gleditsia triacanthos | honey locust | N | few, small, 6' |
| Glyceria striata | fowl manna grass | N | |
| Helianthus hirsutus | bristly sunflower | N | |
| Impatiens capensis | spotted touch-me-not | N | |
| Juglans nigra | black walnut | N | scattered, small, 5' |
| Lactuca canadensis | wild lettuce | N | |
| Leersia oryzoides | rice cut grass | N | |
| Lobelia siphilitica | great blue lobelia | N | |
| Oxalis stricta | tall wood sorrel | N | |
| Panicum virgatum | prairie switch grass | N | |
| Phalaris arundinacea | reed canary grass | I | small patches |
| Phyla lanceolata | fog fruit | N | |
| Poa pratensis | Kentucky blue grass | I | |
| Polygonum punctatum | smartweed | N | |
| Quercus bicolor | swamp white oak | N | browsed, 3' |
| Rosa multiflora | Japanese rose | I | |
| Ruellia strepens | smooth ruellia | N | |
| Scirpus atrovirens | dark green rush | N | |
| Sicyos angulatus | bur cucumber | N | |
| Solidago gigantea | late goldenrod | N | dominant at S end |
| Taraxacum officinale | common dandelion | I | |
| Toxicodendron radicans | poison ivy | N | |
| Ulmus rubra | slippery elm | N | |
| Verbena urticifolia | white vervain | N | |
| Vernonia missurica | Missouri ironweed | N | |
| Xanthium strumarium | cocklebur | N | |

**Pilot Study Site Number**: 7
**Landowner**:
**County**: Schuyler
**State ID**: 20000241
**Practices and Acreage**: CP23 (Wetland Restoration), 38.5 acres; ADD (Additional Acres), 1.5 acres
**Year implemented or enrolled**: 2000 (PERM)

**Date of Site Visit**: 1 September 2010
**Investigator**: James Ellis
**Duration of visit**: 2 hours
**Visit Notes:** The LaMoine River was out of its banks late into the summer and flooded this CREP site along with the parts of the road to access the site. Muddy road conditions and a vehicle not adequate to traverse the mud forced the investigator to walk quite a ways to access site.

**General Vegetation Structure**: This site had fairly sparse herbaceous vegetation that was from two to four feet tall with widely scattered to densely clumped trees. In most areas the trees were around 20 feet tall, and the canopies were not touching. In a few areas the tree canopies were touching.

**Dominant plant species noted**: The herbaceous layer was dominated by marsh elder and panicled aster with some patches of water smartweed. The trees were almost exclusively eastern cottonwood.

**General notes**: This field sits in the floodplain of the LaMoine River, which lies directly to the north and east. An old oxbow of the river is also to the north and west of the site. Based on areas of bare soil where water ponded and windrows of vegetation debris in some areas, this area had flooded multiple times throughout the summer. Heavy rains came late in July, which forced the LaMoine River out of its banks and into the surrounding floodplain. There were still areas of saturated soil and standing water on the day of the visit.

Tall eastern cottonwood with a few scattered sycamore dominated the east half of the site. The west side was bit higher, and the trees were not as tall, but some areas had dense patches of green ash and silver maple saplings three to five feet tall. A few pin and burr oaks were detected. Marsh elder and other weedy annual species dominated the herbaceous layer.

**Other:** A rectangular plot of land probably about 5 acres in size almost directly in the center of the site had been recently tilled or worked with a disc. This area was devoid of any vegetation. This strip of disturbed soil also continued south onto the adjacent property.

***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

| Scientific Name | Common Name | Origin | Notes |
|---|---|---|---|
| Acer negundo | boxelder | N | seedlings |

| | | | |
|---|---|---|---|
| Acer saccharinum | silver maple | N | seedlings |
| Amaranthus sp. | pigweed | . | |
| Ammannia coccinea | long-leaved ammannia | N | |
| Apocynum cannabinum | dogbane | N | |
| Aster simplex | panicled aster | N | dominant |
| Calystegia sepium | American bindweed | N | |
| Carex grayi | common bur sedge | N | |
| Carex lupulina | common hop sedge | N | |
| Carex tribuloides | awl-fruited oval sedge | N | |
| Carex vulpinoidea | brown fox sedge | N | |
| Cephalanthus occidentalis | buttonbush | N | |
| Convolvulus arvensis | field bindweed | I | |
| Cynanchum laeve | blue vine | N | |
| Cyperus strigosus | long-scaled nut sedge | N | |
| Echinochloa crusgalli | barnyard grass | I | |
| Eleocharis obtusa | blunt spike rush | N | |
| Fraxinus pennsylvanica var. subintegerrima | green ash | N | seedlings to small trees |
| Gleditsia triacanthos | honey locust | N | |
| Iva annua | marsh elder | N | huge stands |
| Morus alba | white mulberry | I | saplings |
| Muhlenbergia schreberi | nimblewill | N | |
| Phalaris arundinacea | reed canary grass | I | few patches |
| Phyla lanceolata | fog fruit | N | |
| Platanus occidentalis | sycamore | N | few trees, 10' |
| Polygonum coccineum | water smartweed | N | large patch |
| Polygonum hydropiper | water pepper | I | |
| Polygonum pensylvanicum | pinkweed | N | |
| Polygonum punctatum | smartweed | N | |
| Populus deltoides | eastern cottonwood | N | dominant, 10-20' |
| Quercus macrocarpa | burr oak | N | few, small |
| Quercus palustris | pin oak | N | few, small |
| Rumex altissimus | pale dock | N | |
| Sagittaria latifolia | common arrowhead | N | |
| Setaria glauca | yellow foxtail | I | |
| Sida spinosa | prickly sida | I | |
| Stachys tenuifolia | smooth hedge nettle | N | |
| Ulmus rubra | slippery elm | N | saplings |
| Vitis riparia | riverbank grape | N | |
| Xanthium strumarium | cocklebur | N | |

**Pilot Study Site Number**: 8
**Landowner**: Steven Bergman
**County**: Menard
**State ID**: 20081357
**Practices and Acreage**: CP4D (Permanent Wildlife Habitat), 19.5 acres; ADD (Additional Acres), 47.42 acres.
**Year implemented or enrolled**: 2008 (PERM)

**Date of Site Visit**: 2 September 2010
**Investigator**: James Ellis
**Duration of visit**: 1.25 hours
**Visit Notes:** Three fields comprise this site. Vehicle and walking access was easy and facilitated by mowed paths through parts of the fields.

**General Vegetation Structure**: A fairly thick growth of tall grasses five to six feet tall with scattered annual and perennial forbs characterized the three fields on this site.

**Dominant plant species noted**: Prairie switch grass and common goldenrod dominated all three fields with common ragweed as a dominant species in Field 13.

**General notes**: These three fields sit within a fairly large area of topographically low and flat landscape to the south of the channelized Salt Creek. The fields are surrounded by second growth forest. Old river oxbows and ditches are nearby, but the investigator was uncertain if these field flooded from Salt Creek. There was not physically evidence that showed these fields flooded this year.

Vegetation structure was fairly even with scattered forbs in a matrix of tall grasses. Prairie switch grass, Indian grass, and big bluestem were evident along with giant foxtail and crabgrass. Weedy forbs include common ragweed, common goldenrod, horseweed, and tall boneset.

**Other:** There was an area on the west end of Field 9 that looked like it had been tilled or worked with a disc earlier in the year. There was lush growth of weedy species with virtually no big grasses. Smartweeds, giant foxtail, barnyard grass, and horseweed dominated this disturbed area.

***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property. Origin denotes if a plant is considered native (N) or not native (I) to Illinois.*

| Scientific Name | Common Name | Origin | Notes |
|---|---|---|---|
| **Field #10** | | | |
| Agrostis alba | red top | N | |
| Ambrosia artemisiifolia | common ragweed | N | |
| Andropogon gerardii | big bluestem | N | |
| Bidens frondosa | common beggar's ticks | N | |
| Chamaesyce maculata | nodding spurge | N | |
| Conyza canadensis | horseweed | N | |
| Digitaria sanguinalis | hairy crab grass | I | common |

| | | | |
|---|---|---|---|
| Echinochloa crusgalli | barnyard grass | I | |
| Elymus canadensis | Canada wild rye | N | |
| Erechtites hieracifolia | fireweed | N | |
| Erigeron annuus | annual fleabane | N | |
| Eupatorium altissimum | tall boneset | N | |
| Muhlenbergia schreberi | nimblewill | N | |
| Oxalis stricta | tall wood sorrel | N | |
| Panicum capillare | old witch grass | N | |
| Panicum virgatum | prairie switch grass | N | dominant |
| Plantago rugelii | red-stalked plantain | N | |
| Polygonum punctatum | smartweed | N | around the edges |
| Ratibida pinnata | yellow coneflower | N | |
| Rudbeckia hirta | black-eyed Susan | N | |
| Rudbeckia subtomentosa | sweet black-eyed Susan | N | |
| Setaria faberi | giant foxtail | I | thick patches |
| Solanum carolinense | horse nettle | N | |
| Solidago canadensis | common goldenrod | N | scattered, common |
| Sorghastrum nutans | Indian grass | N | evenly scattered |
| Toxicodendron radicans | poison ivy | N | |
| Verbena hastata | blue vervain | N | |
| **Field #9** (additional species) | | | more of the same |
| Acer saccharinum | silver maple | N | seedlings |
| Amaranthus sp. | pigweed | . | |
| Aster lateriflorus | side-flowering aster | N | |
| Aster simplex | panicled aster | N | |
| Eclipta prostrata | yerba de tajo | N | |
| Fraxinus pennsylvanica var. subintegerrima | green ash | N | seedlings |
| Leersia oryzoides | rice cut grass | N | around edges |
| Panicum dichotomiflorum | fall panicum | N | |
| Sida spinosa | prickly sida | I | |
| Xanthium strumarium | cocklebur | N | |
| **Field #13** | | | |
| Abutilon theophrasti | buttonweed | I | |
| Ambrosia artemisiifolia | common ragweed | N | dominant |
| Bidens aristosa | swamp marigold | N | |
| Cirsium discolor | pasture thistle | N | |
| Convolvulus arvensis | field bindweed | I | |
| Conyza canadensis | horseweed | N | |
| Daucus carota | Queen Anne's lace | I | |
| Echinochloa crusgalli | barnyard grass | I | |
| Elymus canadensis | Canada wild rye | N | |
| Erigeron annuus | annual fleabane | N | |
| Eupatorium altissimum | tall boneset | N | |
| Gleditsia triacanthos | honey locust | N | |
| Heliopsis helianthoides | false sunflower | N | |
| Panicum capillare | old witch grass | N | |
| Panicum dichotomiflorum | fall panicum | N | |
| Panicum virgatum | prairie switch grass | N | dominant |

| | | | |
|---|---|---|---|
| Polygonum persicaria | lady's thumb | I | |
| Ratibida pinnata | yellow coneflower | N | |
| Setaria faberi | giant foxtail | I | |
| Solanum carolinense | horse nettle | N | |
| Solidago canadensis | common goldenrod | N | dominant |
| Solidago gigantea | late goldenrod | N | |
| Sorghastrum nutans | Indian grass | N | |
| Verbena hastata | blue vervain | N | |
| Xanthium strumarium | cocklebur | N | |

Site Number: 9
Landowner:
County: Greene
State ID: 20041069
Practices: CP23 (Wetland Restoration), 11.3 acres; ADD (Additional Acres), 8.7 acres
Year implemented or enrolled: 2004 (PERM)

Date of Site Visit: 30 June 2010
Investigator: James Ellis
Duration of visit: 2.25 hours
Visit Notes: With deep ditches along a narrow gravel road, parking was limited adjacent to site. Standing water and a thick growth of trees precluded a thorough assessment of the south half of the site.

General Vegetation Structure: Much of the site was dominated by thick and diverse growth of herbaceous vegetation ranging from four to five feet tall. There were scattered trees over eight feet tall to the west, and a dense growth trees could be seen that dominated the south section of the site.

Dominant plant species noted: The site ranged from dry to wet and botanical diversity was moderately high. Wet areas were dominated by reed canary grass, cattail, dark green bulrush, and *Carex* spp. On the higher ground on the west side of the site, common goldenrod, annual fleabane, big bluestem, Queen Anne's lace, wild parsnip, and tall boneset were dominants. Silver maple and eastern cottonwood ranging from eight to over ten feet tall dominated the south end of the site.

General notes: Due to topographic diversity within the site there were differences in drainage conditions from dry to wet that could be detected as vegetation differences across the site. Standing water and saturated soils were also evident over the south half of the site. The differences in drainage conditions contributed to botanical diversity as a whole with no particular species of plants completely dominating the dry or wet areas. Tall trees in the wet south portion did tend to dominate, but herbaceous vegetation could be seen under the trees as well. The investigator also noted that much of the botanical diversity in the wet areas came from native plant species. The invasive reed canary grass was present on the site, but it did not dominate. A thick patch of reed canary grass outside of the CREP practice was noted along the gravel road.

Other: There were large ditches and pond that probably had been excavated in the past. These areas of open water were in the middle and on the west side of the site. They seemed fairly deep or at least deep enough not to support aquatic vegetation, but plants like cattails were abundant along the edges.

The adjacent second growth, bottomland forest of mostly silver maple was not assessed during this visit.

***Species List Disclaimer:*** *Species noted were those noticed as dominant or unique on the day of visit and do not represent a complete or exhaustive list of plant species that might occur on the property.*

| Scientific Name | Common Name | Origin | Notes |
|---|---|---|---|
| Acer saccharinum | silver maple | N | adventive, 4-7' |
| Acorus calamus | sweet flag | I | wet areas |
| Agrostis alba | red top | N | |
| Allium vineale | field garlic | I | dry areas |
| Andropogon gerardii | big bluestem | N | |
| Apocynum cannabinum | dogbane | N | |
| Asclepias incarnata | swamp milkweed | N | wet areas |
| Asclepias syriaca | common milkweed | N | dry areas |
| Aster pilosus | hairy aster | N | dry areas |
| Aster simplex | panicled aster | N | |
| Bidens frondosa | common beggar's ticks | N | wet areas |
| Bromus commutatus | hairy brome | I | dry areas |
| Bromus inermis | Hungarian brome | I | dry areas |
| Calystegia sepium | American bindweed | N | dry areas |
| Campsis radicans | trumpet creeper | N | |
| Carex annectens | large yellow fox sedge | N | wet areas |
| Carex davisii | awned graceful sedge | N | |
| Carex frankii | bristly cattail sedge | N | wet areas |
| Carex grisea | wood gray sedge | N | |
| Carex molesta | field oval sedge | N | wet areas |
| Carex normalis | spreading oval sedge | N | wet areas |
| Cirsium vulgare | bull thistle | I | |
| Conium maculatum | poison hemlock | I | few |
| Convolvulus arvensis | field bindweed | I | |
| Cyperus sp. | nut sedge | . | |
| Daucus carota | Queen Anne's lace | I | dry areas |
| Desmanthus illinoensis | Illinois bundle flower | N | |
| Eleocharis obtusa | blunt spike rush | N | wet areas |
| Elymus virginicus | Virginia wild rye | N | |
| Erigeron annuus | annual fleabane | N | dry areas |
| Eupatorium serotinum | late boneset | N | dry areas |
| Festuca arundinacea | tall fescue | I | |
| Fraxinus pennsylvanica var. subintegerrima | green ash | N | adventive, 4-7' |
| Geum laciniatum | rough avens | N | |
| Glechoma hederacea | ground ivy | I | |
| Gleditsia triacanthos | honey locust | N | adventive, 6-10' |
| Glyceria striata | fowl manna grass | N | wet areas |
| Hypericum punctatum | spotted St. John's-wort | N | dry areas |
| Iva annua | marsh elder | N | |
| Juncus torreyi | Torrey's rush | N | wet areas |
| Ludwigia alternifolia | seedbox | N | wet areas |
| Lycopus virginicus | bugle weed | N | wet areas |
| Lysimachia ciliata | fringed loosestrife | N | wet areas |

| | | | |
|---|---|---|---|
| Lythrum alatum | winged loosestrife | N | wet areas |
| Pastinaca sativa | wild parsnip | I | dry areas |
| Penthorum sedoides | ditch stonecrop | N | wet areas |
| Phalaris arundinacea | reed canary grass | I | wet areas |
| Phleum pratense | timothy | I | |
| Phyla lanceolata | fog fruit | N | wet areas |
| Poa pratensis | Kentucky blue grass | I | |
| Polygonum pensylvanicum | pinkweed | N | |
| Polygonum punctatum | smartweed | N | wet areas |
| Polygonum ramosissimum | bushy knotweed | N | |
| Populus deltoides | eastern cottonwood | N | adventive, 6-10' |
| Potentilla norvegica | rough cinquefoil | N | dry areas |
| Rubus allegheniensis | common blackberry | N | |
| Rumex altissimus | pale dock | N | |
| Rumex crispus | curly dock | I | |
| Salix nigra | black willow | N | adventive, 4-7' |
| Scirpus atrovirens | dark green rush | N | dominant, wet areas |
| Scirpus georgianus | bristleless dark green rush | N | wet areas |
| Scirpus pendulus | red bulrush | N | wet areas |
| Setaria faberi | giant foxtail | I | dry areas |
| Solanum carolinense | horse nettle | N | dry areas |
| Solidago canadensis | common goldenrod | N | dominant, dry areas |
| Solidago gigantea | late goldenrod | N | wet areas |
| Teucrium canadense | germander | N | |
| Torilis japonica | Japanese hedge parsley | I | dry areas |
| Toxicodendron radicans | poison ivy | N | |
| Typha angustifolia | narrow-leaved cattail | I | wet areas |
| Verbena urticifolia | white vervain | N | dry areas |
| Verbesina alternifolia | wingstem | N | wet areas |
| Vernonia missurica | Missouri ironweed | N | wet areas |
| Xanthium strumarium | cocklebur | N | |